UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/856,335	05/18/2001	Erich Lugscheider	01-329	7881

7590 09/08/2005

Bachman & LaPointe
Suite 1201
900 Chapel Street
New Haven, CT 06510-2802

EXAMINER	
BAREFORD, KATHERINE A	
ART UNIT	**PAPER NUMBER**
1762	

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/856,335	LUGSCHEIDER, ERICH	
	Examiner	Art Unit	
	Katherine A. Bareford	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) *2-9,15-21,23,25-27 and 29-31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,10,12,14,24,28,32 and 34-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Claims 11, 13, 22 and 33 are canceled

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The petition to revive the application was granted on April 25, 2005. As a result, the RCE request and submission of April 19, 2005 have been entered. Furthermore, the request for suspension in the RCE filing of Feb. 25, 2005 was granted, running for three months from May 6, 2005, as indicated in the paper mailed May 6, 2005. As the period for suspension expired on August 6, 2005, the following action is now provided.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Feb. 25, 2005, and completed with the submission of April 19, 2005 has been entered.

As a result of that amendment, claims 2-9, 15-21, 23, 25-27 and 29-31 remain withdrawn. Claims 11, 13, 22 and 33 remain canceled. Claims 1, 10, 12, 14, 24, 28, 32, 34 and 35 remain pending for examination, and new claim 36 has been filed for examination.

Priority

3. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on Nov. 25, 1998. The Examiner notes that the applicant has now filed a certified copy of the 198 54 512.6 application as required by 35 U.S.C. 119(b), received April 21, 2005. The other priority document, as to 198 57 737.0, has already previously been received.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 10, 12, 14, 24, 28, 32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al (US 5143746) in view of Savkar et al (US 5047612) and Moreau et al (US 5180921).

Inoue teaches a process form producing a wear resistant layer on a substrate by spraying an iron oxide based material to the substrate. Column 1, lines 5-20. The material to be sprayed can be 100 percent magnetite. Column 2, lines 5-15, column 4, lines 35-65 and column 5, lines 15-30. The material can be thermally sprayed by a plasma spraying process. Column 3, lines 50-68 and column 5, lines 30-68 (see the methods of Table 1 and 2). The material can be sprayed in the form of a powder.

Column 4, lines 45-60 and column 5, lines 30-68 (see the particle sizes of Tables 1 and 2). Because of the material sprayed and the layer provided the coating would inherently be corrosion resistant. The applied coating can be homogenous. Column 4, lines 1-10. The applied coating can be a thin layer of less than 250 microns in thickness, i.e. 150 microns in thickness. See column 4, lines 45-60 and column 5, Table 2, Example 1, indicating a magnetite coating plasma sprayed to a thickness of about 150 microns.

Claim 12: the spray process can be a water plasma spray process. Column 3, line 65 through column 4, line 2 and column 5, lines 30-68 (see the methods of Tables 1 and 2).

Claims 14, 28: the material can be 100 percent magnetite or pure magnetite. Column 2, lines 5-15, column 4, lines 35-65 and column 5, lines 15-30.

Claim 24: the powder size can be 5-40 or 40-100 or 40-150 microns, for example. See column 5, lines 30-68 (see the particle sizes of Table 1 and 2).

Claim 32: the powder size can be 5-40 or 40-100 microns, for example. See column 5, lines 30-68 (see the particle sizes of Table 1 and 2).

Claim 35: The material can be sprayed by a plasma spraying process. Column 3, lines 50-68 and column 5, lines 30-68 (see the methods of Table 1 and 2).

Inoue teaches all the features of these claims except the on-line monitoring and control system (claim 1+), with monitoring of the amount of powder fed (claim10).

However, Savkar teaches a method and apparatus for controlling the deposition of a powder in a plasma spray process, where the spray process is monitored by an on-

line system. See column 1, lines 5-15 and 50-68. The system monitors the impact point of the material forming the layer of material on the substrate. See column 3, lines 15-30 and column 4, lines 45-60 and figure 1. The system also provides on-line monitoring and control of the powder feed rate to the plasma flame. See figure 1 and column 5, line 60 through column 6, line 15. This system provides for optimized deposition of the coating on the target substrate. See column 2, lines 15-50.

As well, Moreau teaches a method and apparatus for controlling the deposition of a powder in a plasma spray process, where the spray process is monitored by an on-line system. See column 1, lines 30-50 and figures 1-2. The system monitors direct process parameters of temperature and velocity of particles in the thermal spray immediately before their impact on the substrate. See column 1, lines 30-50. Moreau teaches that this allows an efficient feedback signal generator performing feedback for the gun input parameters to maintain optimum spraying conditions. See column 1, lines 30-50. This system provides it can be used in addition to measuring indirect gun input variables. See column 1, lines 30-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Inoue to use both the on-line monitoring and control systems suggested by Savkar and Moreau in order to provide optimized deposition of the coating onto the substrate because Inoue teaches a plasma spray system of depositing magnetite onto a substrate surface and Savkar and Moreau teach the desirability of using on-line monitoring and control systems when plasma spraying in

order to optimize the deposition of the coating. It would have been obvious to use both types of monitoring systems (Savkar provides for monitoring impact point, powder feed, carrier gas, etc., and Moreau provides for measuring particle temperature and velocity in the stream) simultaneously to provide maximum control of system variables because Savkar and Moreau teach the benefits of measuring various features of the spray system on-line and both teach that more than one type of process feature can be monitored (Savkar provides for monitoring impact point, powder feed, carrier gas, etc., and Moreau provides for measuring particle temperature and velocity in the stream and also indicates that other gun variables can be monitored).

6. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue in view of Savkar and Moreau as applied to claims 1, 10, 12, 14, 24, 28, 32 and 34 above, and further in view of Yoshinaka et al (US 5158643).

Inoue in view of Savkar and Moreau teaches all the features of this claim except the air as plasma gas. Inoue does teach that the spray coating is conducted in a neutral gas atmosphere not having an extreme oxidizing or reducing nature. See column 3, lines 50-55. For example, argon or mixtures of argon and nitrogen are used. See column 3, lines 55-60.

Yoshinaka teaches that when plasma spraying material, it is conventional known to provide plasma fueled by air, argon, hydrogen or helium, etc. see column 9, lines 45-55.

It would have been obvious to one of ordinary skill in the art to modify Inoue in view of Savkar and Moreau to use air as part of the plasma fuel gas as suggested by Yoshinaka with an expectation of desirable results, because Inoue in view of Savkar and Moreauteaches using a plasma gas such as argon/nitrogen to provide an atmosphere that is not of an extreme oxidizing or reducing nature, and Yoshinaka teaches that it is conventionally known to use air as part of plasma gas mixture. While air would be oxidizing, one of ordinary skill in the art would understand that it could be mixed with the described argon/nitrogen to provide a not "extreme" oxidizing mixture, which would allow for a more cost efficient gas.

7. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al (US 5143746) in view of Moreau et al (US 5180921).

Inoue teaches a process form producing a wear resistant layer on a substrate by spraying an iron oxide based material to the substrate. Column 1, lines 5-20. The material to be sprayed can be 100 percent magnetite. Column 2, lines 5-15, column 4, lines 35-65 and column 5, lines 15-30. The material can be thermally sprayed by a plasma spraying process. Column 3, lines 50-68 and column 5, lines 30-68 (see the methods of Table 1 and 2). The material can be sprayed in the form of a powder. Column 4, lines 45-60 and column 5, lines 30-68 (see the particle sizes of Tables 1 and 2). Because of the material sprayed and the layer provided the coating would inherently be corrosion resistant. The applied coating can be homogenous. Column 4, lines 1-10. The

applied coating can be a thin layer of less than 250 microns in thickness, i.e. 150 microns in thickness. See column 4, lines 45-60 and column 5, Table 2, Example 1, indicating a magnetite coating plasma sprayed to a thickness of about 150 microns.

Inoue teaches all the features of these claims except the on-line monitoring and control system for monitoring properties within the thermal spray.

However, Moreau teaches a method and apparatus for controlling the deposition of a powder in a plasma spray process, where the spray process is monitored by an on-line system. See column 1, lines 30-50 and figures 1-2. The system monitors direct process parameters of temperature and velocity of particles in the thermal spray immediately before their impact on the substrate. See column 1, lines 30-50. Moreau teaches that this allows an efficient feedback signal generator performing feedback for the gun input parameters to maintain optimum spraying conditions. See column 1, lines 30-50. This system provides it can be used in addition to measuring indirect gun input variables. See column 1, lines 30-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Inoue to use the on-line monitoring and control system suggested by Moreau in order to provide optimized deposition of the coating onto the substrate because Inoue teaches a plasma spray system of depositing magnetite onto a substrate surface and Moreau teaches the desirability of using an on-line monitoring and control system measuring properties of the material within the thermal spray when plasma spraying in order to optimize the deposition of the coating. .

Response to Arguments

8. Applicant's arguments filed April 19, 2005 have been fully considered but they are not persuasive.

Applicant argues that the three references to Inoue, Savkar and Moreau, all substantially predate the present application, and while the age of the references is not, of itself, relevant, it does provide a substantial period of time in which the intervening art may teach away from the proposed combination. Applicant argues that this teaching away is shown from the lack of the combination being taught by the intervening art, such as the cited references to Schutz and Bourque, which have not been cited as anticipatory or further supporting grounds of rejection. Furthermore, as to the further use of Yoshinaka in rejecting claim 35, applicant argues that this reference and the other three references would not make claim 35 obvious for the reasons discussed with regard to the first three references above.

The Examiner has reviewed these arguments, however, the rejections are maintained. Applicant has noted the age of the references, however, contentions that the reference patents are old are not impressive absent a showing that the art tried and failed to solve the same problem notwithstanding its presumed knowledge of the references. See *In re Wright*, 569 F.2d 1124, 193 USPQ 332 (CCPA 1977). Here, the arguments of applicant that the cited references to Schutz and Bourque show a teaching away does not rise to the level of showing that the art tried and failed to solve the same

problem notwithstanding its presumed knowledge of the references. The mere fact that Schutz and Bourque were not used to make a rejection does not mean that they teach away from the claimed process. In fact, both reference teach methods of on-line monitoring of thermal spray particles in flight, which suggests the continuing desirability of monitoring thermal spray processes. Neither teach or suggest that magnetite or any other iron oxide cannot or should not be monitored by the process, and thus provide no "teaching away" from using the process to monitor magnetite as claimed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KATHERINE BAREFORD
PRIMARY EXAMINER